Micropternus brachyurus mesos Kloss.

The type of this form, which I tentatively suggest may be a natural hybrid between *M. b. phaioceps* and *M. b. gularis*, is a female from Kuttak, No. 277 F. A.S.B., in the collection of the Zoological Survey of India (Indian Museum, Calcutta). The tail bands are broad and distinct, the shafts of the inner primaries dark, and the centres of the throat-feathers dark. Wing 110 mm.

† **Chrysocolaptes strictus chersonesus** Kloss.

This form, on account of its extremely small size and isolated habitat, can be regarded as quite a good subspecies, but of *Ch. guttacristatus*, not of *Ch. strictus* from Java. Birds in which the females have the head spotted black and white in the one case, and in the other golden-yellow as in *Ch. strictus*, can hardly be maintained as races of the same species.

Though Singapore Island is mentioned first in the description, in view of the subspecific title, it is I think permissible to designate the other specimen examined as the type; this is a male from Si Karang, southern Johore, collected on the 1st of August, 1908, by H. C. Robinson and E. Seimund. Wing 148 mm. measured flat. Federated Malay States Museum No. 1940/08.

XII.—*Some Notes on Oriental Woodpeckers and Barbets.*

By E. C. Stuart Baker, M.B.O.U.

Whilst working out the Woodpeckers and Barbets in the collection of bird-skins collected by Mr. E. G. Herbert in Siam, I have taken the opportunity of going into the question of subspecies of the forms represented therein, and the following notes are the result of my investigations.

PICUS OCCIPITALIS.

I have been able to examine in the British Museum a series of seventy males and nearly as many females, which show that though there are certain differences between the birds

of different geographical areas, undue weight has sometimes been attached to alleged points of variation which are purely individual, and in some cases, perhaps, do not even exist. As regards size, the following table gives the wing-measurements of the Indian and Burmese birds examined :—

N.W. India	155 to 165 mm.	Average 158·8.
Nepal	146 to 149 mm.	„ 147·5 (3 birds only).
Sikkim	130 to 149 mm.	„ 142·0.
Assam	136 to 148 mm.	„ 142·0.
North Burma	144 to 151 mm.	„ 148·5.
Central Burma ..	143 to 157 mm.	„ 150·2.
South Burma	140 to 150 mm.	„ 144·5.

Judging from measurements, therefore, it would seem that we have a large form from extreme north-western India, a smaller form from north-eastern India, and a bird intermediate in size from Nepal. From north and central Burma we have another intermediate-sized form, whilst from south Burma and northern peninsular Siam and Burma the form is again somewhat smaller.

In coloration there appear to be three quite distinct races in the above areas, which agree well with the three main divisions in size above referred to.

The north-west Indian and Nepal birds are green above with the rump tinged with yellow, sometimes fairly strongly so, and this is most noticeable in the Nepal birds, although these are so much smaller. The average wing-measurements of 20 birds is 158 mm.

Birds from Sikkim, Buxa Dooars, Assam, north and south of the Brahmapootra river, as far east as Sadiya and as far south as Tippera, are distinguished by being much suffused with golden bronze on the upper parts, most conspicuously so on the wing-coverts and inner secondaries; the rump and upper tail-coverts are much more yellow in some cases, being practically wholly of this colour, and below also the plumage is conspicuously tinged with bronze-yellow.

The average wing-measurement of 46 males is 142 mm.

The third geographical race, as shown by coloration, seems to extend over the whole of Burma, Siam, and northern

Malay Peninsula. In appearance this bird is very similar to those from north-west India, but it is duller, both above and below, and has no yellow-bronze tint like the Assam group, and very seldom any yellow on the rump and upper tail-coverts.

As regards names for this group, we have the following:—

(1) *Gecinus occipitalis* Vigors, P. Z. S. 1830, p. 8 : Mussoorie.

(2) *Gecinus hessei* Gyldenstolpe, Orn. Monatsb. xxiv. 1916, p. 28 : Siam.

Admittedly, all of these are nothing but geographical races of *Picus canus canus*, and will therefore bear that specific name.

Picus occipitalis was described together with *Picus squamicollis* in the P. Z. S. for 1830 as new species "from the Himalaya Mountains," but from what part of the Himalaya they came there is nothing to show, though the presumption is that *occipitalis* came with *squamicollis* from somewhere in the north-west. We may therefore consider Mussoorie the type locality for it.

We have, then, the following races in India and Burma:—

(1) **Picus canus occipitalis.**

Picus occipitalis Vigors, P. Z. S. 1830, p. 8.

Type locality. Mussoorie.

The largest of all the Indian forms, with a wing averaging 158 and varying between 146 and 165 mm. Above, the plumage is green with only a trace, sometimes rather pronounced, of yellow on the rump and upper tail-coverts. No bronze-yellow suffusion on the wings and upper plumage. The Nepal birds are small, as I have already shown, but there are only three very old, very worn skins, and for the present I prefer to keep them with this subspecies. They are not in the least like the next bird in colour.

Habitat. Western Himalaya, from Nainital, Mussoorie and Garhwal to east Nepal, north into south Kashmir, Simla States, and Kumaon.

(2) **Picus canus gyldenstolpei.**

Stuart Baker, Bull. B. O. C. vol. xxxix. 1918, p. 19.

Type locality. Sadiya, Assam.

Type No. 87. 8. 10. 1023. ♂ ex Hume Coll. British Museum.

A medium-sized bird, with a wing of an average of 142 mm. and varying between 130 and 149 mm.

Distinguishable at a glance from every other subspecies by the strong bronze-yellow sheen on the upper plumage, especially on the wings. A bird from the area inhabited by this form can be picked out without hesitation from any number of allied skins.

Habitat. Sikkim, Bhutan, the whole of Assam, north and south of the Brahmapootra to the extreme east, and running south through Cachar, Sylhet, Manipur, Looshai Hills, Tippera, and Chittagong, being replaced in Arrakan by the next subspecies.

I can find no name applicable to this bird, and name it in honour of Count Nils Gyldenstolpe, who has done so much good ornithological work in the east with the Swedish Mission.

† (3) **Picus canus hessei.**

Gecinus canus hessei Gyldenstolpe, Orn. Monatsb. xxiv. 1916, p. 28.

Type locality. Pak Koh and Denchai, northern Siam.

A rather larger bird, the wings of the specimens examined by me (60 birds) varying between 140 and 157 mm., and averaging 148 mm. Gyldenstolpe's, Herbert's, and Kloss's birds vary between 140 and 155 mm., and average the same as the Museum birds, 148 mm.

Differs from *P. c. gyldenstolpei* in being greener and in having no bronze-yellow reflections on the upper plumage and wings. It differs from *G. c. occipitalis* in being rather smaller, more green and duller both above and below. There is also decidedly more yellow on the rump and upper tail-coverts.

Count Gyldenstolpe named his birds from northern Siam specimens, of which I have now seen a fair series, and I cannot see any difference between these and normal Burmese specimens. Average measurements of this Woodpecker do not seem to decrease as one works south until practically the latitude of Rangoon is reached, but from this point there is a decided diminution which steadily becomes more pronounced down peninsular Burma and Siam. It does not appear desirable at present to make any further division between peninsular and southern Burmese birds, and I retain them all under Count Gyldenstolpe's name.

Habitat. Chin and Kachin Hills, and the whole of north and central Burma, north and central Siam, and peninsular Burma and Siam, as far south as Moulmein. Northern Shan birds approach the Yunnan form, whilst southern Shan specimens cannot be distinguished from those of Siam.

The Chinese form of *canus* also appears to be divisible into several subspecies, partly by measurement and partly by coloration.

The measurements of the fine Museum series of over 100 specimens are as follows :—

1. Foochow	Wing 139–151 mm.	Average, 142·5.	19	specs.
2. Fokien	„ 135–150 mm.	„ 143·5.	18	„
3. Chinkiang	„ 138–149 mm.	„ 142·0.	9	„
4. Ningpo..	„ 140–151 mm.	„ 145·0.	13	„
5. Shensi, Ichang, Hupeh, etc.	„ 135–149 mm.	„ 144·0.	31	„
6. Setchuan	„ 141–152 mm.	„ 145·5.	5	„
7. Yunnan	„ 151–167 mm.	„ 157·0.	9	„
8. Formosa	„ 136–139 mm.	„ 137·1.	7	„
9. Hainan	„ 129–135 mm.	„ 132·0.	2	„

Colour differences are as follows :—

Birds from Foochow and Fokien, and presumably the rest of south China, are much darker than those from the north of the Yangtse river, thus forming a well-marked division between (1 & 2) and (3 to 5); birds from Setchuan

are darker than either of the first two groups, and somewhat browner in general tint. Those from Yunnan are much darker and duller than either of the other three groups, and the green is of a very sombre brownish tint, though the skins available are so bad that they may possibly look duller and browner than they should.

Formosan and Hainan birds are both darker green above than the adjacent Chinese birds, and are much browner and duller below, but I can find little difference in this respect between the birds of these two islands.

The following are the names available for the Chinese forms:—

(1) *Gecinus guerini* Malh. Rev. et Mag. Zool. 1849, p. 539: China.
(2) „ *tancolo* Gould, P. Z. S. 1862, p. 283: Formosa.
(3) „ *hainanus* O.-Grant, Ibis, 1899, p. 584: Hainan.
(4) „ *sordidior* Rippon, Bull. B. O. C. xix. 1908, p. 32: Yunnan.
(5) *Picus canus setschuanensis* Hesse, Orn. Monatsber. 1911, p. 193: Setchuan.

Taking into consideration colour and size combined, we seem to have the following well-marked eastern races in addition to those already enumerated for India and Burma:—

(4) **Picus canus sordidior.**

Gecinus sordidior Rippon, Bull. B. O. C. xix. 1906, p. 32.

Type locality. Yunnan.

A large bird with a wing averaging about 157 mm., and with very dull dead-green plumage, this being especially so on the lower parts. It cannot be confused with any other subspecies, but the specimens at present available for examination are very poor. Birds from north and north-east Shan States should be placed under this subspecies, though their colouring is not so definitely dull and dark as that of Yunnan birds.

Habitat. Yunnan and northern Shan States.

(5) **Picus canus guerini.**

Picus guerini Malh. Rev. et Mag. Zool. 1849, p. 539.

Type locality. China (apud Malherbe's Monograph).

This is a pale form, intermediate between typical *P. canus canus* inhabiting the extreme north of China etc., and the darker form inhabiting China south of the Yangtse Kiang river. In size the two appear to be much the same, 37 specimens of this subspecies averaging 143 mm. as against just under 144 mm. for 53 specimens of the southern bird.

Bill about 28 mm. and ranging from 26 to 30 mm.

Habitat. The provinces of Ningpo, Chinkiang, Hupeh, Ichang, and Shensi, north of the Yangtse river.

(6) **Picus canus setschuanensis.**

Hesse, Orn. Monatsber, 1911, p. 194.

Type locality. Setchuan.

A darker, duller bird than that found north or south of the Yangtse, nearly as dark, but not so dull as *sordidior*, from which it also differs in being decidedly smaller.

Wing average 145·5 mm.; bill about 29 mm., and varying between 26 and 32 mm.

Habitat. Setchuan only, so far as is known at present.

(7) **Picus canus ricketti**, subsp. nov.

Types. ♂ 1914.4.8.261. F. W. Styan Coll. Brit. Mus.
♀ 1914.4.8.262. „ „ „

Type locality. Fokien, China.

Considerably darker than *guerini*, but, as shown above, not differing from it in size.

Wing about 144 mm., and varying between 135 and 151 mm. Bill about 28 mm.

Habitat. There are large series from Foochow and Fokien in the British Museum collection, and about half a dozen birds from localities farther west and south.

I can find no name for this bird, which has generally been considered to be the same as *taiwanus* from Formosa, and I have therefore the pleasure of naming it after Mr. C. B.

Rickett, well known for his work in China on ornithological subjects.

(8) **Picus canus tancolo.**

Gecinus tancolo Gould, P. Z. S. 1862, p. 283.

Type locality. Formosa.

Differs from south Chinese birds in being smaller; wing average 137·1, and bill about 26 mm., varying from 24·5 to 28, and in one case 30 mm. It is also a darker bird, and the under plumage is very distinctly duller and also browner.

(9) **Picus canus hainanus.**

Gecinus hainanus O.-Grant, Ibis, 1899, p. 584.

Type locality. Five-finger Mts., Hainan.

There are only two specimens of Hainan birds in the British Museum, but these are smaller than Formosan birds, with smaller bills, and are possibly also rather darker above and less brown below.

It is with some doubt that I keep them separate, but Dr. Hartert, who formerly considered the two subspecies identical (Novitates Zool. xvii. p. 222), informs me that a series of 12 birds in the Tring Museum bears out the above characters differentiating the two races, and that he considers they should be kept distinct.

Wing about 132 mm.; bill about 25 mm.

Habitat. Hainan.

PICUS VITTATUS.

Gyldenstolpe has recently described a new form of *P. vittatus* from northern Siam as *P. v. eisenhoferi*. The differences enumerated by him are as follows:—Size, larger than in *vittatus*, colour of upper parts bright grass-green instead of olive-yellow, rump-feathers tipped yellow, black cap on head larger. He also refers to the colour of the wings and the spotting of the quills. The wing he gives as 142 mm.

All these variations in plumage are purely individual, and even the difference in size between northern and southern

birds is much less marked than is generally the case, as may be seen from the following measurements :—

Java	5 ♂ ♂.	Wings 129–137 mm.	Average 132 mm.
„	7 ♀ ♀.	„ 123–131 mm.	„ 126·5 mm.
Malay States ..	4 ♂ ♂.	„ 127–132 mm.	„ 127 mm.
„ „ ..	5 ♀ ♀.	„ 127–130 mm.	„ 128 mm.
Cochin China..	2 ♂ ♂.	„ 128–130 mm.	„ 129 mm.
„ „ ..	3 ♀ ♀.	„ 133–136 mm.	„ 134 mm.
Siam	3 ♂ ♂.	„ 136–143 mm.	„ 139·5 mm.
„	9 ♀ ♀.	„ 128–149 mm.	„ 136 mm.

The largest bird in this series is a female with a wing of 149 mm. from as far south as Pakjan in peninsular Siam, whereas there is another female from as far north as Bangkok with a wing of 128 mm., smaller than any of the Javan males.

I can only distinguish two races of this Woodpecker :—

(1) **Picus vittatus vittatus.**

Picus vittatus Vieill. Nouv. Dict. d'Hist. Nat. xxvi. 1818, p. 91 : no locality.

Picus vittatus eisenhoferi Gyldenstolpe, Orn. Monatsb. xxiv. 1916, p. 28 : Pa Hing, N. Siam.

Type locality. Malacca.

Habitat. Java, Malay States, western and eastern peninsular Siam and Burma, and thence into south-eastern Siam as far as Bangkok, and thence again, if Gyldenstolpe is correct as referring his birds as nearest *vittatus*, and not *viridanus*, well up into north central Siam, also Cochin China. The exact range of *vittatus* and *viridanus* evidently wants more careful working out unless *eisenhoferi* is *viridanus*.

(2) **Picus vittatus viridanus.**

Picus viridanus Blyth, J. A. S. B. xii. 1843, p. 1000.

Gecinus weberi Müller, Journ. f. Orn. 1882, p. 421 : Salanga.

Type locality. Arrakan.

Differs from *P. vittatus vittatus* in having the whole of the underparts streaked from vent to upper breast.

Specimens of this Woodpecker vary to a very great degree *inter se* from all parts of the range. Thus three birds from Tounghoo are so different from one another that they might well be taken for three geographical races, if not for distinct species. One bird has the back bright grass-green, a second has it dull dark green, whilst the third has the whole of these parts covered with a bright bronze-yellow sheen.

In size they do not vary greatly, though, as usual, northern birds average a trifle larger than southern. But even in this respect the individual variation is so great throughout the range, that it does not seem advisable to attempt any division into geographical races on the ground of variation in measurements.

The birds obtained by Mr. Herbert appear to be the first actual record of its appearance in Siam, as all the birds from this country labelled *viridanus* in the British Museum are true *vittatus*.

Habitat. Burma, Chin Hills, Kachin Hills, southern Shan States, north and central Siam, and possibly the extreme west of peninsular Siam and Burma. *P. v. vittatus* appears to work up the eastern side of the peninsula into Siam and Cochin China.

The form found in the island of Salanga (*S. weberi*) is also nothing but *viridanus*.

† PICUS ERYTHROPYGIUS.

As at present accepted, there are two races of this Woodpecker, *P. e. erythropygius* from Cochin China, and *P. e. nigrigenis* from Burma, etc.

The only two birds of the former race which I have been able to examine are the type, a female in the British Museum collection, and a male in Lord Rothschild's Tring Museum. Mr. Kloss has, however, recently ascribed to this subspecies certain specimens obtained in Siam, and three specimens obtained by Mr. E. G. Herbert from the same country on the whole support his view. Mr. Kloss is not, however, quite accurate in referring to *nigrigenis* as "a very distinct subspecies and a far handsomer bird," for the difference

between the two forms is very slight, and, indeed, I can trace no difference beyond the fact that *erythropygius* has a white or whitish bill, and *nigrigenis* has a dark horny-coloured bill.

The alleged differences are (1) position and extent of red cap, (2) depth of yellow colouring below, (3) whitish or dark colour of bill.

The red of the head in the type of *erythropygius* is exactly matched by many specimens of *nigrigenis* from Burma, and this feature varies very greatly: thus in two birds from the same area we have two adult males; in one the red crown commences about 6 mm. from the bill, and extends back for about 25 mm.; in the second it commences a full 10 mm. back, and only extends for about 15 mm. In comparative size the red cap of the first is treble that of the second.

As regards the brightness of the yellow underparts, this character is equally variable and valueless, whilst some *nigrigenis* are much brighter, many are duller than the type of *erythropygius*.

The third and best distinction, the colour of the bill, is as follows:—In the type, which is a dismounted bird, the bill has been painted pure ivory-white, but under the paint it is a pale dull yellow, slaty on the gonys and also on the base of the lower mandible and on the upper mandible just beyond the nostril. The bill of the male in the Tring Museum is ivory-white.

Mr. Herbert's birds and one collected by Hume at Meklong, Siam, are nearer *erythropygius* than *nigrigenis*, if the two forms are divisible. The male has the bill slaty horny, the lower mandible nearly all yellowish white, and the upper mandible splashed with the same. The females have the bill very pale; in one it is all a dirty horny white with dark base and a dark streak running through the nostril exactly as it does in the type.

The bills of *nigrigenis* are generally horny black, or dark horny, but in many cases they are more or less marked with yellowish white, and this occurs in specimens from areas as far apart as Pakjan, Kolidoo, and Thoungyeen.

As regards size, the two races seem much the same. The wing of the type of *erythropygius* is 160 mm., of the Siamese birds from 152 to 165 mm., whilst Mr. Kloss's birds run from 140 to 161 mm. measured on the curve.

Of the 48 skins of *nigrigenis* in the British Museum the extremes in length of wing are 147 and 165 mm.

IYNGIPICUS CANICAPILLUS.

I have not yet had time to work out all the subspecies of the genus *Iyngipicus*, but there appear to be two species admitted in the British Museum Catalogue which cannot be maintained, viz., *pumilus* and *auranteiventris*.

Blanford has already pointed out (Fauna Brit. Ind., Birds, iii. p. 46) that *pumilus* cannot possibly be separated from *canicapillus*. Of the series of so-called *pumilus* in the British Museum the wings vary from 70 to 81 mm., and those of *canicapillus* from 74 to 87 mm., but both so-called subspecies occur in the same area, and it would really seem as if Hargitt had picked out the smallest birds with wholly black rectrices and given them the same name, and then picked out some larger ones with spotted rectrices and called them *canicapillus* (according to Blyth). The remaining birds seem to have been almost indiscriminately assigned to either.

Amongst the so-called *pumilus* many have more or less white on the tail, and again among Hargitt's *canicapillus* there is a bird with a wing of 86 mm. with the central rectrices quite black.

Exactly parallel to the above two forms are those of *aureiventris* and Hargitt's *picatus*. In the Museum there is a specimen of each shot on the same date at the same place, and it is probable that the latter is nothing but an extra worn specimen of the former.

CHRYSOPHLEGMA FLAVINUCHA LYLEI.

Chrysophlegma flavinucha lylei, Kloss, Ibis, 1918, p. 110.

This race, which Kloss describes from a single specimen, appears to me to be only *C. f. pierrei*. His bird was obtained

from Koh Lak, south-west Siam, and two specimens, a male and a female, have now been sent home by Mr. Herbert from Chan Tuek and Pakchan, from the same part of Siam. These two latter are undoubtedly nothing but *pierrei*. The male has a wing of 152 mm., and the female 148 mm., whilst the type of *pierrei*, a female, has a wing of 156 mm. Mr. Herbert's birds also have the pale upper and under plumage of *pierrei*, contrasting well with *wrayi* in this respect.

The other differences noted by Dr. Kloss, *i. e.*, the paler bill, nearly black centres to the forehead and dark sides of head and neck, are not present in Mr. Herbert's specimens, which agree perfectly with *pierrei* in these details.

The wings of *C. f. wrayi* in the British Museum collection vary between, ♂ ♂ 140–141 mm., ♀ ♀ 140–148 mm., and it is possible that with more material *wrayi* and *pierrei* may prove to be one and the same. *C. f. flavinucha* varies considerably in the depth of colouring on the lower plumage, some individuals being much darker than others, and though *wrayi* from the south would also appear to be much smaller on an average than *pierrei* from the north, yet one female, *wrayi*, from Salanga, is the same size as Mr. Herbert's bird from Chan Tuek, a very long way farther north.

CALLOLOPHUS MINIATUS PERLATUS.

Callolophus miniatus perlatus Kloss, Ibis, 1918, p. 110.

Mr. Kloss, who creates this new subspecies on a single unsexed specimen from Koh Lak, south-west Siam, diagnoses it as bigger than *C. m. malaccensis*, having a wing of 137 mm., and says that it differs in having the breast and abdomen paler, the ground-colour being less tinged with brown, and the dark bands narrower and farther apart; the nuchal crest is without spots and bars.

There are other specimens from Siam in the British Museum collection, and these do not bear out Mr. Kloss's diagnosis, but show, as do the other birds in this big series, that all these so-called subspecific variations are merely individual, occurring in some specimens throughout the

whole area. Nor is Mr. Kloss's bird any larger than many typical *malaccensis* from the extreme south.

This subspecies cannot be maintained.

†CHRYSOCOLAPTES GUTTACRISTATUS.

Chrysocolaptes guttacristatus has sometimes been held to be a mere subspecies of *Chrysocolaptes strictus* of Java. This seems to me to be quite unnecessary, for we have the broad dividing line between the two in the fact that the females possess, the one a black crown, the other a yellow one. Nor is this difference anywhere bridged over by intermediate forms, and though both birds probably came from the same stock comparatively recently, nature has now eliminated the useless intermediate forms and created a definite species.

Chrysocolaptes guttacristatus must, however, be divided into certain geographical races, a matter of even greater difficulty, however, than is usual with such divisions. I have had some 300 specimens for the purpose of examination, and throughout the whole of its vast range, from southern India to the south Malay Peninsula, I can find no variation in plumage which in any way helps me to define the subspecies. I am therefore thrown back upon the size of the bird and comparative size of bill as the sole features of distinction.

Eliminating young and moulting birds, the measurements have been taken of 193 specimens, divided as follows, females and males being considered together, as there appears to be no sexual difference in size :—

North-west India	9 birds.	Wings 177–190 mm.	Average	184.
		Bills 50– 63·5 mm.		
Nepal	10 „	Wings 172–182 mm.	„	177·8.
		Bills 50– 63·5 mm.		
Sikkim and Dooars ..	24 „	Wings 164–177 mm.	„	170·8.
		Bills 43– 50 mm.		
Assam, N. and S.	18 „	Wings 164–177 mm.	„	171·5.
		Bills 43– 50 mm.		
Chin to Shan States ..	6 „	Wings 163–178 mm.	„	169·0.
		Bills 50– 57 mm.		

South Siam	6 birds.	Wings 157–171 mm.	Average	166·0.
		Bills 40– 45 mm.		
Burma, S. to Rangoon .	23 „	Wings 160–177 mm.	„	166·2.
		Bills 55– 60 mm.		
S. Burma and Malay .	59 „	Wings 150–172 mm.	„	159 9.
		Bills 38– 45 mm.		
South & Central India .	35 „	Wings 145–159 mm.	„	152·0.
		Bills 38– 45 mm.		

It appears, therefore, that there is a very large race with an enormous bill found in the northern Himalayas, Mussoorie, and Nepal.

A second, rather smaller bird in Sikkim and Assam, with a relatively smaller bill.

A third, which is about the same size, but with a larger bill, in the Chin and Shan States.

A fourth, in Burma, very similar to that in the Chin and Shan States.

A fifth, exactly the same as the southern Indian bird, in peninsular Burma and Siam and the Malay States.

A sixth, small form with very small bill in southern and south-central India.

Of these there do not appear to be sufficient grounds for dividing the second, third, and fourth from one another.

The first stands out on account of its great size and very large bill, but few birds having this latter under 60 mm.

The fifth and sixth are indivisible in colour or size of bill.

The following are the names available :—

Picus guttacristatus Tickell, J. A. S. B. ii. 1833, p. 578 : Borabhum, *i. e.* Manbhum, south-west Bengal.

Picus strenuus Gould, P. Z. S. 1839, p. 165 : Assam.

Picus sultaneus Hodgson, J. A. S. B. vi. 1837, p. 105 : Nepal.

Indopicus delesserti Malherbe, Mém. Acad. Metz, 1848, p. 343 : Malabar.

Chrysocolaptes g. indomalayicus Hesse, Orn. Monatsb. xix. 1911, p. 182 : Salanga.

Chrysocolaptes strictus chersonesus Kloss, Ibis, 1918, p. 113 : Southern Johore, *vide antea*, p. 181.

? *Chrysocolaptes bacha* Reichenb. Scans. Picinæ, 1854, p. 399 : Central Asia.

The type of *P. guttacristatus* was obtained in Borabhum in Manbhum, Bengal, and is a bird with a wing of 166 mm. and a small bill. It is certainly not the same as the big Nepal bird, which Hodgson later on called *sultaneus*, but is much the same as many Assam and Burmese birds, and all these latter seem referable to the same name.

I admit the following three forms :—

(1) **Chrysocolaptes guttacristatus guttacristatus.**

Picus guttacristatus Tickell, J. A. S. B. ii. 1833, p. 578 : Borabhum.

Picus strenuus Gould, P. Z. S. 1839, p. 165 : Assam.

A medium-sized bird with wing varying between 157 and 178, average 168·4 mm., and with bill between 43 and 60 mm. ; in Bengal and Assam birds the bill is never over 50 mm , but in Burmese birds always 50 or over.

Habitat. Bengal, from Chota Nagpore and Behar east to Assam, north and south of Brahmapootra river, Cachar, Tippera, Manipur, Looshai, Chin and Kachin Hills, Shan States, northern and central Siam, and the whole of Burma, north of Rangoon and the latitude of that place.

If it be considered desirable to divide the Burmese from the Assam and typical birds on account of their rather smaller size and larger bill, they would have to be given a new name, as there is none at present applicable.

(2) **Chrysocolaptes guttacristatus sultaneus.**

Picus sultaneus Hodgson, J. A. S. B. vi. 1837, p. 105 : Nepal.

? *Chrysocolaptes bacha* Reichenb. Scans. Picinæ, 1854, p. 399 : Central Asia.

This is a very large form with wing between 172 and 190 mm., average 180·5 mm., and a bill between 50 and 63·5 mm., very rarely under 60 mm.

Habitat. N.W. India, Mussoorie to Nepal. Nepal birds average rather smaller than the N.W. Indian ones, but they all have the same enormous bill.

(3) **Chrysocolaptes guttacristatus delesserti.**

Indopicus delesserti Malh. Mém. Acad. Metz, 1848, p. 343 : Malabar.

Chrysocolaptes guttacristatus indomalayicus Hesse, Orn. Monatsb. xix. 1911, p. 182 : Salanga I.

Chrysocolaptes strictus chersonesus Kloss, Ibis, 1918, p. 113 : S. Johore.

Habitat. Southern India, south of Bombay in the west and Orissa in the east, peninsular Burma, Siam, and the Malay peninsula.

A small bird with wing between 145 and 172 mm. and average 157 mm., and bill between 38 and 45 mm.

It seems to me to be inadvisable to separate the south Indian from the south Burmese birds, the same results in each case having presumably been arrived at by parallel evolution. Those who refuse to accept under the same name the same bird from two widely different areas would have to use the name *indomalayicus* for the Burmese-Malayan form, but the only difference between the two is the slightly larger average size of the latter.

Robinson (*vide* page 181) gives the length of wing of Kloss's *chersonesus* as 148 mm.; this is a trifle under the size of any specimen from the British Museum series, but is not sufficient reason alone for naming it as a separate subspecies. There are specimens from Johore in this collection with wings exceeding 170 mm.

MICROPTERNUS BRACHYURUS.

Mr. Boden Kloss has recently (Ibis, 1918, pp. 107 *et seq.*) created many new subspecies of this Woodpecker, in some cases it would seem with hardly sufficient material, although the net results are very accurate. Six races are comparatively well defined by colour-differences, these being *M. b. brachyurus*, *M. b. gularis*, *M. b. phaioceps*, *M. b. fokiensis*, *M. b. badiosus*, and *M. b. holroydi*. The Indian and Burmese birds Mr. Kloss splits up into further subspecies—*lanka* from Ceylon, *blythii* from the eastern Himalayas, *mesos* from ? Cuttack, Calcutta and Bengal, *burmanicus* from

Burma, *humei* from the north-west Himalayas, and *williamsoni* from Siam.

Mr. Kloss divides all forms of *Micropternus* from India, Burma, Malay, and Siam into two groups: (1) *brachyurus* group, with the shafts of the wing-quills more or less blackened; and (2) *phaioceps* group, in which the shafts are perfectly unsullied red.

I have examined roughly some 400 specimens of this Woodpecker, and my examination shows that this division into two groups is not very good, as it breaks down when a large number of skins are considered. On the whole, however, we do find that the *brachyurus* group has more black on the wing-shafts than has the *phaioceps*. The following figures show this :—

	Dark shafts.	Red shafts.	
brachyurus from :			
Klang	12	0	
Tenasserim	42	18	
Malacca	26	6	
S. Malay, various places	13	2	
Sumatra	8	1	
Singapore	2	0	103 and 27 respectively.
phaioceps from :			
N.W. India	0	8	
Nepal and Sikkim	12	23	
Bengal and Behar	7	0	Black, varying in extent.
Assam and Cachar	9	22	
N. and Central Burma	9	9	
S. Burma	19	10	
S. Shan States	2	1	58 and 73 respectively.

This suffices to show that we cannot rely on this feature to distinguish between the two groups, neither is it necessary to do so, as the character usually accepted, that of the marking on the chin, is a good one, differentiating plainly between *brachyurus*, *phaioceps*, and *gularis*. In the first, *brachyurus*, and the second, *phaioceps*, the feathers of the chin and upper throat have dark longitudinal centres with pale edges, the general appearance being streaky ; *gularis*, on the other hand, has these feathers dark with narrow

terminal pale markings almost white, which make this part of the bird look squamated. Between typical specimens of *brachyurus* and *phaioceps* it is also easy to distinguish, as the former has the feathers of the throat with the centres of a darker colour than the breast, whilst the latter has them concolorous with it. In the portion of the two birds' habitat where they overlap, both dark- and light-coloured throats are met with, and this obtains over practically the whole of southern Burma, south-western Siam, and the north of peninsular Siam and Burma.

A very careful examination of the long series which I have had the advantage of consulting, shows that there is no other stable difference of colour in any of the various proposed races which would suffice to distinguish them from any other. At first I was inclined to think that Kloss was right in separating the Ceylon bird (*lanka*) on the ground of its being a brighter bay in colour than those from continental India. Of the sixteen birds from Ceylon in the British Museum collection, three are a very bright bay, but a hunt amongst skins from elsewhere has produced similar brightly-coloured individuals of *gularis* from Travancore, Ootacamund, and Madras, and of *phaioceps* from Nepal and Assam. This characteristic seems, therefore, to be valueless.

As regards the barring on the under parts, beyond the fact that as a whole *brachyurus* is far more heavily marked than *phaioceps*, nothing more can be said. There are specimens from Sikkim of the latter form far more heavily marked than are many individuals of *brachyurus* from Malacca, and throughout the range of *Micropternus* this character is one which varies to an extraordinary degree.

Micropternus b. williamsoni is said to differ from other races in having more narrow shaft-streaks on the chin and throat-feathers, no pale shaft-stripes on those feathers, darker breast, dark bars on the tail narrower, and narrower bars on the back and wings. Now all these characters are purely individual and obtain in odd specimens in birds from Sikkim, Assam, Chin Hills, north, south, and central Burma, and Siam itself. But there is one feature of the Siam birds which,

if constant, would entitle it to subspecific rank, and that is the immaculate upper back and scapulars. Of the five Siamese specimens I have examined, four have these parts quite immaculate, and the fifth almost so. Mr. Kloss does not mention this feature, so presumably his specimen—a single one again—was barred on the upper back. Of course, specimens with the back and scapulars immaculate are found everywhere, and there are such specimens in the British Museum collection from Kumaon, Nepal, Behar, and Tenasserim. Such are, however, quite exceptional, and it is curious that the only five examples of the Siam bird which I have been able to examine should be all alike in this respect.

As regards colour-variation, nothing further need be said except that I cannot find the slightest difference between the races named *mesos, blythii, burmanicus*, and *humei*, so that eventually we are thrown back upon variation in size alone if we wish to divide *phaioceps*, *brachyurus*, or *gularis* into further local races.

Micropternus brachyurus brachyurus group.

The following table gives the measurements of adult non-moulting birds in the Museum collection. The places cited are those marked on the labels, but some birds with non-authentic data have been omitted :—

Sumatra	Wing 101–114 mm.	Average 106·5.	8 specimens.		
South Malay, various places..	,, 106–115 mm.	,,	110·2.	15	,,
Malacca	,, 99–115 mm.	,,	107·5.	26	,,
Singapore	,, 113–117 mm.	,,	114·5.	3	,,
*Tenasserim	,, 107–132 mm.	,,	121·5.	56	,,
Klang	,, 109–116 mm.	,,	110·0.	12	,,

Measurements would thus seem to show that we have two races of *brachyurus*, one from Sumatra and the southern Malay Peninsula, with a wing averaging under 110 mm., and never exceeding 117 mm., and a second race from the northern Malay, Siamese and Burmese peninsular areas, with a wing averaging over 121 and seldom under 115 mm.

* This includes birds as far north as the north of peninsular Siam and Burma, but the largest bird, a female, with wing of 132 mm., comes from Amherst.

I can see nothing in coloration to support this decision, and over much of the northern area both *phaioceps* and *brachyurus*, together with many intermediate individuals, occur in great numbers.

Micropternus brachyurus phaioceps group.

This subspecies varies little more in size than does *M. b. brachyurus*, as the following shows :—

N.W. India	Wing 126–142 mm.	Average 132.	8 birds.
Nepal and Sikkim	,, 117–130 mm.	,, 123.	35 ,,
Bengal and Behar	,, 112–123 mm.	,, 116.	7 ,,
Assam to Tippera	,, 111–129 mm.	,, 118·7.	27 ,,
N. and Central Burma.	,, 120–133 mm.	,, 126·9.	18 ,,
S. Burma	,, 117–131 mm	,, 125.	29 ,,
S. Shan States	,, 123–129 mm.	,, 125·5.	3 ,,

The above table therefore shows that we have a very large form in north-western India, an isolated small form in Bengal and Assam (practically all these latter are from south of the Brahmapootra), and a third stretching from Nepal and Sikkim right away to the extreme south of Burma, where it meets true *brachyurus*.

Micropternus brachyurus gularis group.

Ceylon	Wing 112–119 mm.	Average 115·5.	16 birds.
Travancore.....	,, 110–120 mm.	,, 116·4.	9 ,,
Neilgherries and South Madras	,, 117–126 mm.	,, 122·0.	13 ,,
N. of Neilgherries	,, 113–129 mm.	,, 122·0.	16 ,.

Of *gularis*, therefore, we have two possible races, one from Ceylon and Travancore, with a wing of about 116 mm., and a second from the rest of southern India, with a wing of about 122·0 mm., a difference of 6 mm. only, not supported by any colour-differences.

To summarize results by measurements, we have the following :—

Micropternus brachyurus brachyurus group.

(1) Southern Malay Peninsula and Sumatra	Wing about 108·8 mm.	64 specimens.
(2) Northern Peninsula, Burma and Siam	,, ,, 121·5 mm.	56 ,,

Micropternus brachyurus phaioceps group.

(1) N.W. India	Wing about 132·0 mm..	8 specimens.	
(2) Bengal, Behar and Assam, S. of the Brahmapootra .	„ „	118·1 mm.	34 „
(3) Nepal, Sikkim, Assam, N. of the Brahmapootra, Burma and Shan States .	„ „	124·4 mm.	85 „

Micropternus brachyurus gularis group.

(1) Ceylon and Travancore ..	Wing about 115·8 mm.	25 specimens.	
(2) Remaining South India to Orissa	„ „	122·0 mm.	29 „

The names and range for these subspecies will be as follows :—

(1) **Micropternus brachyurus brachyurus.**

Picus brachyurus Vieill. Nouv. Dict. d'Hist. Nat. xxvi. 1818, p. 103 : Java.

Habitat. Malay Peninsula, Sumatra and Java.

Chin and throat streaked with brown, darker than the colour of the breast. Smaller ; wing about 109 mm.

(2) **Micropternus brachyurus williamsoni.**

Micropternus brachyurus williamsoni Kloss, Ibis, 1918, p. 107 : Koh Lak, S.W. Siam.

Habitat. Peninsular Siam and Burma.

Larger ; wing about 121 mm.

Even if Kloss's description of his new subspecies does not hold good, this is the only name applicable to birds from this region, and will therefore stand ; if, however, the Siamese bird proves different in the colour of the back to other north peninsular forms, the latter will then require a new name.

(3) **Micropternus brachyurus phaioceps.**

Micropternus phaioceps Blyth, Journ. As. Soc. Beng. xiv. 1845, p. 195 : Arrakan.

Habitat. The type of *phaioceps* comes from Arrakan ; this name will therefore apply to the birds found throughout

the eastern Himalayas from Nepal, Assam, north of the Brahmapootra, and the whole of Burma north of the Peninsula, Shan States and north and west Siam.

Streaks on throat of the same colour as the breast. Size medium; wing about 124 mm.

The name *rufinotus* is a synonym of *gularis*. The specimen said to be the type is marked as having been taken by M'Clelland in Assam; in the B.M. Catalogue it is said to come from Bengal, but the bird itself is a typical *gularis* from southern India.

(4) **Micropternus brachyurus humei.**

Kloss, Ibis, 1918, p. 109: Rohilkund (*vide supra*, p. 180).

Habitat. North-western Himalayas. There are specimens from Kumaon, Dehra Doon, Nainital, and Buxa in the Natural History Museum.

A very large bird, with a wing averaging 132·0 mm.

(5) **Micropternus brachyurus mesos.**

Kloss, Ibis, 1918, p. 109: Kuttak, Orissa (*vide supra*, p. 181).

Habitat. Bengal, Behar and Assam, south of the Brahmapootra river to Tippera, but not to Arrakan.

A small bird, with a wing of 118 mm.

Here again Kloss's name must stand, though his diagnosis cannot be fully confirmed. Also it is unfortunate that he should first give a new name to a bird from Bengal and then state on the same page that the type locality for typical *phaioceps* is also Bengal. I have already shown, however, how this very pardonable mistake arose.

(6) **Micropternus brachyurus gularis.**

Picus (*micropternus*) *gularis* Jerdon, Madr. Journ. xiii. 1844, p. 139: Southern India.

Habitat. South India, from Orissa on the east and Bombay on the west, but excluding southern Travancore.

Chin- and throat-feathers squamated, not streaked. Larger; wing about 122 mm.

(7) **Micropternus brachyurus lanka.**

Kloss, Ibis, 1918, p. 108: Ceylon.

Habitat. South Travancore and Ceylon.

Smaller; wing about 115·8 mm.

(8) **Micropternus brachyurus fokiensis.**

Brachypternus fokiensis Swinh. P. Z. S. 1863, p. 87: Fokhien.

Habitat. Southern China from Fokhien to N.E. Cochin China.

Head paler than back, and more buff than rufous; chin and throat pale buff with broad black centres; underparts deep smoky brown, with no traces of bars except on flanks. Larger. Wing 124–135 mm.; average 11 specimens, 129·4 mm.

(9) **Micropternus brachyurus holroydi.**

Micropternus holroydi Swinh. Ibis, 1870, p. 95: Central Hainan.

Habitat. Hainan (? S.E. Cochin China and east Siam).

Similar to *fokiensis*, but with darker head, and the feathers of the throat and chin with larger dark centres and more narrow pale margins. Smaller. Wing 111–122 mm.; average 8 specimens, 115·9 mm.

(10) **Micropternus brachyurus badiosus.**

Meiglyptes badiosus Bonaparte, Consp. Av. i. 1850, p. 113: Borneo.

Habitat. Borneo.

A very rich, deep red bird, back and scapulars generally immaculate, centre of throat-feathers unicolorous with the breast, and only narrowly margined with white; red under eye, often extending to above it also; terminal half of tail unbarred black.

In one specimen from Labuan the feathers of the nape and sinciput are tipped with crimson.

Wing 107–118 mm.; average 12 specimens, 113·5 mm.

TIGA JAVANENSIS AND TIGA SHOREI.

Although recently *T. shorei* has generally been held to be only a subspecies of *T. javanensis*, this does not appear to me to be correct, for over a considerable portion of its range it is found occupying the same country as forms of that bird. This is especially the case over north and north-east Burma and down the hill-ranges as far as Tenasserim. *Tiga shorei* is separable from all the races of *T. javanensis*, in having the chin and throat with two central streaks of black instead of one. In a few individuals the streak is single on the chin, but in every instance it bifurcates and becomes two distinct streaks on the throat. Again, *T. shorei* has the feathers of the crest with pale, almost white bases instead of dark, almost blackish ones. This gives the crest a brighter, more scarlet tinge, in addition to which the crest itself is longer, and there is practically no visible black patch on the nape posterior to the scarlet.

We have therefore two distinct species :—

(1) **Tiga shorei.**

Picus shorii Vigors, P. Z. S. 1831, p. 175 : Himalaya Mts.

Throat, and generally chin, with a double median stripe; feathers of crest with pale bases, more scarlet and longer than in *javanensis*.

A large bird. Wing from 146 to 162 mm. ; average of 31 birds, 153·3 mm.

Habitat. Himalayas, from Nepal through Sikkim, northern Assam, Chin and Kachin Hills, northern Arrakan Hills and down the Burmese hill-ranges as far south as Thyetmyo.

(2) **Tiga javanensis.**

A smaller bird with shorter crest, the feathers of which have dark bases, and a single streak of black dots down the centre of the chin and throat. In very rare cases this line becomes double on the throat, but in such the intermediate space is white, not dull buff as in *shorei*.

This species seems to be divisible into certain geographical races.

In coloration there is a decided difference between southern

Indian and southern Burmese birds. The latter have, as a general rule, the black nuchal patch decidedly larger and extending well on to the interscapulars. In general tint also they are darker and duller, the backs a deeper olive with a more pronounced tint of bronze, and the crests and rumps a distinctly deeper, more crimson red.

As regards measurement, the following are the dimensions of birds in the British Museum, together with a few others which I have been able to examine :—

Travancore	Wing 131–142 mm.	Average 136·6.	13 specs.
Burma above lat. 20°..	„ 141–165 mm.	„ 154·0.	8 „
„ „ „ 19°..	„ 139–151 mm.	„ 145·0.	26 „
„ „ „ 18°..	„ 142–157 mm.	„ 147·2.	12 „
„ „ „ 17°..	„ 139–155 mm.	„ 144·5.	12 „
„ „ „ 16°..	„ 136–151 mm.	„ 143·0.	44 „
„ „ „ 14°..	„ 137–150 mm.	„ 142·5.	29 „
„ „ „ 12°..	„ 132–144 mm.	„ 140·5.	15 „
„ „ „ 10°..	„ 136–152 mm.	„ 144·0.	12 „
Malay, south of lat. 10°	„ 122–136 mm.	„ 129·5.	31 „
Sumatra	„ 118–139 mm.	„ 128·3.	8 „
Java	„ 124–138 mm.	„ 130·3.	23 „
Borneo	„ 118–130 mm.	„ 123·9.	31 „

On the above material it is not very easy to define what subspecies should be made. The bird from Borneo is very different from all others in colour, and needs no consideration. Birds from Java, Sumatra, and below lat. 10° in the Malay Peninsula show a big drop in size when compared with those from farther north, and Kloss seems to be well advised in fixing latitude 10° as a division between two of the races, but the difficulty lies in separating the northern and central Burmese forms, and it seems to me that it is therefore perhaps not desirable to attempt any such division. In coloration there is no difference between them, and though there is a fairly steady average decrease in size as one works south from lat. 20° to lat. 12°, yet we find the birds between lat. 10° and 12° averaging more than those between 17° and 18°, and we obtain individuals from Malwoon, lat. 10°·3, with a wing of 152 mm., against some individuals from northern Arrakan, of 143 mm.

The three birds from the upper Chindwin are huge, having wings of 157, 159, and 165 mm., and if these three were eliminated, we should not have any very great difference in size between the most northern birds and any other areas north of 10°. I therefore leave them for the present all under one name. If eventually the extreme northern birds have to be separated from the central and southern Burmese and Siam birds, the latter will have to be given a new name, as the northern form will bear the name *intermedia*, which was originally bestowed upon a northern Arrakan bird.

I retain the following species and subspecies :—

(1) **Tiga shorei.**

Vide above.

(2) **Tiga javanensis javanensis.**

Picus javanensis Ljungh, K. Vet.-Ac. Nya Handl. xviii. 1797, p. 137 : Batavia, Java.

Chrysonotus tridactylus Swains. Class. Birds, ii. 1837, p. 309 : Java.

Picus tiga Horsf. Trans. Linn. Soc. xiii. 1822, p. 177 : Java.

A very small bird, with wing averaging rather under 130 mm., and varying between 118 and 139 mm.

Habitat. Java, Sumatra, and Malay Peninsula, south of lat. 10°.

(3) **Tiga javanensis borneensis.**

Tiga javanensis borneensis Dubois, Ornis, xiv. 1907, pp. 371, 522 : Borneo.

This is a tiny bird, the wing averaging under 124 mm., and only varying between 118 and 130 mm. It also differs, however, very distinctly in coloration, having the back and wings much lighter with practically no red or bronze tint. Thus, if two series of birds are laid out on a table, the one from Borneo and the other, say, from Malacca, the former appears to be yellow-green above, and the latter red-gold.

Habitat. Borneo only.

(4) **Tiga javanensis exsul.**

Tiga javanensis exsul Hartert, Nov. Zool. viii. 1901, p. 50: Bali.

Hartert divides this bird from other races on two characters: (1) the excessive cross-barring below, and (2) the red patch on the nape of the female. The only female in the British Museum has no red nape, and the male does not seem to be distinguishable from other Javan birds. On the other hand, the specimens in the Tring Museum certainly seem distinct, and all three females in this collection have the red patch quite apparent.

Habitat. Bali, ? Java.

(5) **Tiga javanensis intermedia.**

Picus intermedius Blyth, J. A. S. B. 1845, p. 193: Arrakan.

Like typical *T. j. javanensis*, but larger. The average wing-measurement of 159 birds from the whole area is 144·4 mm., and from the table given above it will be seen that this is practically the same as that for birds between 10° and 12° in the extreme south of the range.

Habitat. Cachar and hills south of the Brahmapootra, Manipur, and the whole of Burma north of 10°, Siam, Shan States, and Yunnan. Blyth's type was from north Arrakan.

(6) **Tiga javanensis rubropygialis.**

Picus rubropygialis Malh. Rev. Zool. 1845, p. 100: Bengal.

Chrysonotus erythropygius Cab. & Heine, Mus. Hein. iv. pt. ii. 1863, p. 173: South India.

Malherbe describes his type as coming from Bengal, and Jerdon misquotes him as describing it from Bangalore. This Woodpecker is, however, very rare in Bengal proper, and the specimen in question may possibly have come from southern Orissa, often mistermed Bengal in olden days, when indeed it formed part of that Presidency. The southern portion of Bengal as represented by Orissa has an entirely southern Indian avifauna, and this form of Woodpecker is found there more frequently than in the north.

T. j. rubropygialis has a wing varying between 127 and 142 mm., and averaging for 13 specimens 137·5 mm. The so-called type-specimen is a tiny bird with a wing of only 127 mm.

Habitat. South India northwards to southern Orissa and Bombay.

(7) **Tiga everetti.**

Tiga everetti Tweedd. P. Z. S. 1878, p. 612, pl. xxxvii., ♂ et ♀ : Puerto Princessa, Palawan I.

This form seems to constitute a quite separate species. The males have no black collar below the nape; the fore-neck and upper breast are dull olive-brown; the chin and throat are speckled with black, but have no definite medial line or lines; there is also a red moustachial patch, and the lower plumage, as in *T. j. exsul*, is barred, not edged with black.

The female has the posterior crest crimson.

Habitat. Palawan.

GAUROPICOIDES RAFFLESI.

I can find no colour distinctions between the various geographical races of this Woodpecker which are in any way constant. The type locality is Sumatra, and Hesse has made three subspecies—*i. e.*, one from Sumatra, a second smaller one from Borneo, and a third alleged larger one from the Malay Peninsula.

Hesse also claims that the Malayan bird differs from the Sumatran in that the male in the former has the upper tail-coverts tinged with red, whilst the Sumatran one has none of this tint. Of the 21 fully adult males from the Malay Peninsula in the British Museum collection, I find 10 have this red tinge and 11 have not; on the other hand, of the five Sumatran males, one has it slightly and four are without it. This, therefore, would seem to be rather an individual variation than a racial one.

As regards size, this is so variable that it does not seem a very safe characteristic to trust to; but of the Museum

series of Sumatran birds several have data which are not reliable, being merely on dealers' tickets with additional information furnished by the purchaser on now unknown grounds. If we accept average size as sufficing to distinguish races, we have the following:—

(1) **Gauropicoides rafflesi rafflesi.**

Picus rafflesii Vigors, Memoir Life Raffles, 1831, App. p. 669 : Sumatra.

Habitat. Sumatra.

Average wing-measurement of 9 birds, 138 mm. (126 to 153 mm.)

Of this small series the largest bears a dealer's ticket and one in Lord Tweeddale's handwriting, but it appears to be an obvious Malaccan trade-skin, and the second largest (with a wing of 148 mm.) is also a very doubtful one. Excluding these two, the other seven have wings of an average of only 134 mm.

(2) **Gauropicoides rafflesi peninsularis.**

Hesse, Orn. Monatsb. xix. 1911, p. 192 : Malacca.

Habitat. Malacca, south of Malay Peninsula to Tenasserim and S.E. Siam.

Average wing-measurement of 39 birds, 143·5 mm. (138–153 mm.)

(3) **Gauropicoides rafflesi borneonensis.**

Hesse, *loc. cit.* : Borneo.

Habitat. Borneo.

A small bird with an average wing-measurement (16 birds) of 127·5 mm (121–134 mm.)

SASIA.

There are two quite good species of this little Piculet :—

(1) **Sasia ochracea.**

With white eyebrow, and ochre or rufous back.

(2) **Sasia abnormis.**

With no white eyebrow, and olive-green back.

And these seem to be again divisible into the following geographical races :—

(1) **Sasia ochracea ochracea.**

Sasia ochracea Hodgs. Journ. As. Soc. Beng. v. 1836, p. 777 : Nepal.

White eyebrow ; back strongly suffused with rusty-red or ferruginous ; underparts deep ferruginous ; cap olive-green.

Wing 52–59 mm. Average of 50 birds, 54·3 mm.

Habitat. Nepal, Sikkim, Assam, Cachar, Manipur, and the extreme-northern Chin and Kachin Hills.

(2) **Sasia ochracea reichenowi.**

Sasia ochracea reichenowi Hesse, Orn. Monatsb. xix. 1911, p. 181 : Burma.

White eyebrow ; back much paler, ochraceous rather than ferruginous ; below rusty ochraceous instead of deep ferruginous ; cap olive, contrasting more strongly with the back than it does in true *ochracea*.

Wing 50–56 mm. Average of 14 birds, 52·1 mm.

Habitat. The whole of western and central Burma, from Arrakan and Tenasserim and down the Peninsula as far as Mergui on the west.

The birds in the British Museum collection from the Khasia Hills are, strange to say, all typically of this form, though surrounded on every side by *ochracea*. At present I have only three specimens to examine as skins, but I knew the bird well in life in this district and never noticed any difference between it and the adjoining Cachar bird, so under these circumstances merely note the fact for further enquiry.

Sasia abnormis abnormis.

Picumnus abnormis Temm. Pl. Col. iv. 1825, pl. 371. fig. 3 : Java.

Sasia everetti Hargitt. Cat. Birds B.M. xviii. 1890, p. 559 : Borneo.

No white eyebrow. Back dusky olive-green, concolorous

with head; below deep ferruginous, but with a golden sheen on some of the feathers of the lower breast and abdomen, never found in *ochracea*.

Wing 50–56 mm. Average 22 specimens, 53 mm.

I can trace no difference in colour or size between specimens from Borneo, Sumatra, Malay Peninsula, and Siam and those from Java; but there are very few specimens from the latter locality, and it may be, as Hartert says, that a series will show them to be smaller and with a smaller bill than those from elsewhere.

Habitat. Borneo, Sumatra, Java, the Malay Peninsula, as far north as Kossum and thence east up the Peninsula into south-west Siam, as far north and east at all events as Maprit, whence birds were obtained by Mr. E. G. Herbert.

Hargitt's *everetti* is merely the young bird of *abnormis* with the underparts olive-green. There are, however, here and there young feathers of the adult rufous colour, showing distinctly what the bird really is.

Sasia abnormis magnirostris.

Sasia abnormis magnirostris Hartert, Nov. Zool. viii. 1901, p. 51 : Nias.

Differs from *S. a. abnormis* in having a bigger bill, with a depth at base of 6 mm. as against 4–5 in that bird.

There are no specimens of this subspecies in the British Museum.

THEREICERYX LINEATUS.

I cannot discriminate between more than two additional geographical races of this Barbet—*i. e.*, a larger northern and a smaller southern form. There appear to be no constant differences in colour which can be considered subspecific; depth and shade of green, comparative darkness of head, and extent of striation appear to be purely individual.

The measurements of a very large series, working down from north to south, are as follows :—

N.W. India to Nepal ..	Wing	133–142 mm.	Average	137·6.	7 birds.
Nepal.....	,,	124–136 mm.	,,	130·8.	13 ,,
Sikkim and Bhutan ..	,,	117–137 mm.	,,	129·9.	20 ,,
Assam	,,	122–137 mm.	,,	130·5.	30 ,,
N. Burma	,,	124–137 mm.	,,	130·8.	17 ,,
S. Shan States	,,	128–135 mm.	,,	130·7.	3 ,,
Annam	,,	122–124 mm.	,,	123·0.	2 ,,
Siam, N. of Peninsula..	,,	124–131 mm.	,,	129·4.	11 ,,
Central Burma, S. of Chin and Kachin Hills.	,,	107–132 mm.	,,	122·1.	25 ,,
Peninsular Siam	,,	122–127 mm.	,,	124·3.	3 ,,
Tenasserim and Peninsular Burma	,,	111–134 mm.	,,	125·3.	43 ,,
Java	,,	112–124 mm.	,,	117·3.	13 ,,

It is manifest that the north-western Indian bird is not the same as the Javan, and indeed the former bird appears to run much larger than any other form. There are, however, only seven specimens upon which to base an opinion, though of these no fewer than four have wings of 139 mm. and upwards. Should a larger series confirm these measurements, this race would certainly require a new name, as there is none now applicable.

Leaving the north-western form, we have a second with a wing roughly averaging about 130 mm., extending from Nepal through Sikkim, Bhutan, Assam north and south of the Brahmapootra, the Chin, Kachin, and Shan Hills, down into Siam north of the Peninsula. North Arrakan and south Chin Hill birds, with wings averaging 133 mm. (a larger series might decrease this average), also appear to belong to this form. The birds from south Arrakan and the whole of west and central Burma belong to a smaller form with a wing averaging 124 mm., and to this race belong those from peninsular Siam and Burma with wings averaging about 1 mm. longer.

In Java itself we have a very small bird with a wing only 117 mm. in average length, although we have a fair series (13 skins) for examination. At the same time, it is very

noticeable that the smallest bird in the whole series of skins of this species is a fully adult male in perfect plumage from Kaukaryit with a wing of only 109 mm.

The following subspecies seem to be maintainable :—

(1) **Thereiceryx lineatus lineatus.**

Capito lineatus Vieill. Nouv. Dict. d'Hist. Nat. iv. 1816, p. 500: Java.

Very small; wing average 117·3 mm. (13 birds).

Habitat. Java and Bali.

(2) **Thereiceryx lineatus hodgsoni.**

Megalæma hodgsoni Bonap. Consp. Av. i. 1850, p. 144: Nepal.

Megalæma maclellandi Moore & Horsf. Cat. ii. p. 637.

The type of *M. maclellandi* is said to have come from north-east Bengal, and the ticket on the type itself is marked as from Assam; as Assam at one time formed the north-east corner of Bengal both are correct, but the name is merely a synonym for *T. l. hodgsoni*.

A very large bird : wing about 130·6 mm. (103 birds).

Habitat. Nepal, through the Himalaya and eastern Burmese Hills to Siam north of the Peninsula.

(3) **Thereiceryx lineatus intermedius.**

Stuart-Baker, Bull. B. O. C. xxxix. 1918, p. 9: Pahpoon, Burma.

Type. No. 88.11.30.449, ♀, ex Hume Coll., Brit. Mus.

Intermediate in size between *T. l. hodgsoni* and *T. l. lineatus*, with a wing of about 124 mm. (71 birds).

Habitat. Central and south Burma and peninsular Burma and Siam.

? (4) **Thereiceryx**, ? subsp. nov.

From N.W. India.

A very large bird, with an average length of wing over 137 mm.

If a sufficient series of specimens from the north-west of India west of Nepal shows that the great size is consistent, this will suffice to constitute a fourth geographical race.

† THEREICERYX FAIOSTRICTA.

There seems to be great confusion in respect to the proper name which this Barbet should bear.

Temminck originally described it as *Bucco faiostricta* (Pl. Col. iii. 1831, pl. 527) and gave its habitat as Cochin China. In the B.M. Catalogue Temminck is misquoted as *Bucco flavostrictus* (Cat. B.M. xix. 1891, p. 76), and Gray (Genera B. ii. 1846, p. 429) calls it *Megalæma faiostrictus* but is again misquoted in the Catalogue as *M. flavostriata*.

Then Neumann (Bull. B. O. C. xxiii. 1909, p. 31) misquotes Shelley as *Cyanops phæostricta* instead of *Cyanops phæostriata*, and here refers to its having been found in south China, and on the strength of this makes a bird from Saigon, Cochin China, a new subspecies under the name *saigonensis*, the grounds for its separation being its small size, *i. e.* a wing of only 102 mm. as against his south Chinese birds with wings from 112 to 118 mm.

As Kloss correctly shows, however, the original type came from Cochin China, so *saigonensis* is only a synonym of *faiostricta*. Kloss then names the south Chinese birds *prætermissus*, on account of their comparatively large size rendering it necessary to divide them from the Cochin China bird. This distinction does not, however, seem to hold good, though Kloss's name must probably be retained on other grounds.

We have now a fair amount of material available for comparison. In the British Museum there are eight specimens of this Barbet—3 from Ok-Yam, Franco-Siamese boundary, wings 108–112 mm.; 2 from Nhatrang, Annam, with wings of 109 mm.; and one, Neumann's type, from Saigon, with a wing of 102 mm. In Mr. Herbert's collection are two from Hoop Boon, Sriracha, with wings of 112 and 114 mm. respectively. Count Gyldenstolpe has a fine series of 13 birds with wings varying between 110 and 115 mm.; and, finally, Kloss records one from Lat Bua Kao with a wing of 108 mm. Robinson's four birds from Ok-Yam are said to have wings over 112 mm.

Neumann's six birds, which are now in the Tring Museum, have wings, as Kloss states, between 112 and 118 mm. From this it is evident that we cannot separate *prætermissa* on account of size alone, especially when it appears that *saigonensis* is named from an abnormally small-sized bird.

There is, all the same, one quite good difference between the south Chinese birds and those from Cochin China, Annam, etc., and that is, so far as we know now, all true *faiostricta* have a red patch or spot on either side of the lower throat, whilst those from south China have none.

The two forms will therefore stand as follows :—

(1) **Thereiceryx faiostricta faiostricta.**

Bucco faiostricta Temm. Pl. Col. iii. 1831, pl. 527 : Cochin China.

Cyanops phœostricta saigonensis Neumann, Bull. B. O. C. xxiii. 1909, p. 31.

Neumann's type is No. 88.11.25.278, Tweeddale Collection, British Museum ; no sex, locality Cochin China (*vide* Bull. B. O. C. xxiii. p. 31). The wing is 102 mm.

Rather smaller : wing 108–115 mm. (one 102 mm.) ; a red spot well developed on either side of the lower throat.

Habitat. Cochin China, Annam, and Siam.

(2) **Thereiceryx faiostricta prætermissa.**

Thereiceryx flavostrictus prætermissus Kloss, Ibis, 1918, p. 101 : Nanchau Island, Kwangtung, South China. Now in Tring Museum.

A larger bird ; wing 112–118 mm. ; no red spot on either side of the throat.

Habitat. As above, so far as is now known.

It may eventually prove that the south-eastern Cochin China form is always very small, in which case we should have three subspecies and Neumann's name would stand.

† CYANOPS DUVAUCELI.

There are at present the following races of this Barbet described :—

(1) *Cyanops duvauceli duvauceli.*
Bucco duvauceli Less. Traité, 1831, p. 164 : Sumatra.

(2) *Cyanops d. borneensis.*
Parrot, München. Abh. Ak. Wiss., Math.-Phys. Kl. xxiv. 1907, pp. 149, 288 : Borneo.

(3) *Cyanops d. cyanotis.*
Bucco cyanotis Blyth, J. A. S. B. xvi. 1847, p. 485 : Bengal.

(4) *Cyanops d. orientalis.*
Robinson, Ibis, 1915, p. 738 : Ok-Yam, Franco-Siamese boundary.

Cyanops duvauceli is easily divisible into two races—*duvauceli duvauceli*, a small bird with black ear-coverts and a large black patch on upper breast ; and a larger form with blue ear-coverts and no black patch on upper breast, *duvauceli cyanotis*.

The difficulty is in dealing with the intermediate forms, which, in coloration, grade into one another very gradually without having any area in which a stable form has been evolved.

In size we have, on the other hand, a somewhat more definite dividing line than usual ; but the series available for examination is not large, and it is possible that with a larger one, the sudden dividing line may become less distinct.

Sikkim	Wing 80–87 mm.	Average 83·2.	5 birds.	
Assam	,, 78–88 mm.	,, 82·0.	13	,,
N. Burma	,, 77–88 mm.	,, 81·9.	9	,,
Siam	,, 82–87 mm.	,, 83·5.	8	,,
Peninsular Burma and Siam	,, 72–79 mm.	,, 76·4.	15	,,
Malacca and South Malay Peninsula	,, 68–79 mm.	,, 75·2.	24	,,
Sumatra	,, 69–77 mm.	,, 73·9.	12	,,
Borneo	,, 73–80 mm.	,, 76·5.	11	,,

From the above table we see that this species falls into two well-divided races—one with a wing averaging well over 80 mm., the other well under 80 mm.

As regards the larger race, I can find no colour variation by which it can be split up. At first sight Robinson's skins do seem to be separable, because of their bright clean green appearance, and the amount of yellow in the spot under the eye. A careful examination, however, seems to show that this is due only to the beautiful way in which the skins are made. I find that skins made by one of my men in Cachar are facsimiles in colour and size of Robinson's *C. d. orientalis*, and this race cannot be maintained. The amount of yellow in the spot under the eye varies to the same degree in birds from Sikkim to south Burma and peninsular Siam.

In the smaller race a further division seems desirable. Birds from Borneo and Sumatra are not separable from one another, unless one considers a difference of 2·5 mm. on an average wing-measurement sufficient for this purpose. In coloration both birds are identical, with black ear-coverts, and a big black breast-patch. Parrot divides his *borneensis* from typical *duvauceli* as being a brighter, paler green, but the alleged difference is certainly not visible in the two series in the British Museum.

When, however, we come to the Malay Peninsula bird, we find that the ear-coverts are neither pure blue nor all black, but are dull bluish with the basal half black, the proportion of the two colours varying considerably. The black spot on the breast seems to be nearly always present, but is much smaller than in the Sumatran and Bornean birds.

Accordingly there are, I consider, the following three forms of this Barbet, with a possible fourth from Batu Island:—

(1) **Cyanops duvauceli duvauceli.**

Bucco duvauceli Less. Traité, 1831, p. 164 : Sumatra.

Cyanops duvauceli borneensis Parrot, München. Abh. Ak. Wiss., Math.-Phys. Kl. xxiv. 1907, pp. 149, 286 : Borneo.

Black ear-coverts ; black patch on breast well developed. Wing average 75·2 mm. (23 birds).

Habitat. Borneo and Sumatra.

(2) **Cyanops duvauceli robinsoni.**

Stuart-Baker, Bull. B. O. C. xxxix. 1918, p. 20 : Klang, Malay Peninsula.

Type. No. 88.11.30.338, ♂, ex Hume Coll. British Museum.

Ear-coverts mixed blue and black ; black spot on breast small. Wing average 75·6 mm. (39 birds).

Habitat. Malay Peninsula and peninsular Siam and Burma.

(3) **Cyanops duvauceli cyanotis.**

Bucco cyanotis Blyth, J. A. S. B. xvi. 1847, p. 487 : Bengal.

Cyanops duvauceli orientalis Robinson, Ibis, 1915, p. 738 : Ok-Yam, Franco-Siamese Boundary.

Ear-coverts blue ; no black spot on breast. Wing average 82·3 mm. (35 birds).

Habitat. Sikkim, Bhutan, Assam, Chin and Kachin Hills, Shan States, and Siam, north of the Peninsula.

(4) **Cyanops duvauceli gigantorhinus.**

Mesobucco duvauceli gigantorhinus Oberholser, Smiths. Inst. Misc. Coll. lx. no. 7, 1912, p. 6 : Batu Is.

This is merely described by Oberholser as "Like *M. d. duvauceli* but with a much larger bill : Lafau, Nias Il."

No measurements are given, and I have no birds for examination.

Habitat. Apparently Batu and Nias Islands.

† XANTHOLÆMA HÆMACEPHALA.

This little Barbet, which according to the British Museum Catalogue rejoices in no fewer than fourteen names, is, as a matter of fact, very consistent in size throughout its great range, and its colour varies no more than its dimensions

The latter are as follows :—

		Average.	Extremes.	No. of specimens.
Khorasan, Persia	Wing	80·0 mm.	—	1
Punjab	,,	83·2 ,,	80–89 mm.	9
North-west India	,,	79·6 ,,	77–82 ,,	12
Nepal and Bhutan	,,	81·8 ,,	80–84 ,,	6
Assam	,,	84·0 ,,	81–87 ,,	7
Rajputana	,,	81·5 ,,	78–83 ,,	4
Central Provinces	,,	81·3 ,,	79–84 ,,	7
Bengal	,,	80·6 ,,	78–84 ,,	4
Bombay	,,	80·3 ,,	74–89 ,,	27
Madras	,,	80·5 ,,	77–87 ,,	10
Travancore and Mysore ..	,,	79·4 ,,	73–83 ,,	13
Ceylon	,,	78·0 ,,	75–81 ,,	4
Burma	,,	82·5 ,,	77–87 ,,	51
Malay Peninsula	,,	81·7 ,,	78–83 ,,	5
Siam	,,	83·1 ,,	80–87 ,,	12
Annam	,,	80·0 ,,		
Sumatra	,,	80·8 ,,	79–83 ,,	5
Philippines	,,	82·0 ,,	80–88 ,,	22

We thus have these differences at the greatest extremes of its range: a bird in the Punjab with a wing of 83·2 and another in Ceylon with one of 78·0, *i. e.* a difference of only 5·2 mm., but from the north-west 12 birds average only 79·6 mm., which is exactly the same as those from Travancore. Under these circumstances it is impossible to make any geographical races on the ground of size. There is, however, one race which is easily distinguishable on account of the much bigger bill, which, measured from nostril to tip, averages over 17 mm. as against well under 14 mm. for the rest.

We have, therefore :—

(1) **Xantholæma hæmacephala hæmacephala.**

? *Bucco philippensis* Brisson, Orn. iv. 1760, p. 99, pl. vii. fig. 2 : Philippines.

Bucco hæmacephalus Müller, Syst. Nat. Anhang, 1776, p. 88 : Philippines.

Bucco flavigula Bodd. Tabl. Pl. Enl. 1783, p. 20 : Philippines.

Bucco philippinensis Gmel. Syst. Nat. i. 1788, p. 407: Philippines.

Capito flavicollis Bonn. et Vieill. Enc. Méth. 1823, p. 1424: Philippines.

Xantholæma hæmatocephala Shelley, Cat. Birds B.M. xix. 1891, p. 89 (part).

Birds from the Philippines are the darkest of all these little Barbets, and are very heavily striated below. The edges to the wing-quills are dark and very blue, less green, especially when compared with Assam or still more western specimens.

The difference in the size of the bill is very noticeable: birds from the Philippines have the bill from 16 to 18 mm., measured as described, whilst those from Sumatra, Malay Peninsula, Burma, and India have it between 12 and 15 mm., whilst the average for the two forms is under 14 mm. and over 17 mm. respectively.

Brisson's *Bucco philippensis* would appear to be this bird, but his names are not accepted as binomial; the plate is very poor and the description meagre, and under these circumstances it is safer to retain Müller's name.

Habitat. Philippines.

(2) **Xantholæma hæmacephala indica.**

Bucco indicus Lath. Ind. Orn. i. 1790, p. 205: India.

Bucco rubricollis Cuv. Règne Anim. i. 1829, p. 428: "The greater part of India."

Bucco luteus Less. Traité, 1831, p. 163: Pondicherry.

Megalæma rubrifrons Gray, List Capit. Brit. Mus. 1868, p. 11: India.

Xantholæma hæmatocephala Shelley, Cat. Birds B.M. xix. 1891, p. 89 (part).

The differences between *X. h. indica* and *X. h. hæmacephala* are those already pointed out above.

Habitat. Practically the whole of India, from the foothills of the Himalayas to Ceylon, the plains of Burma, Yunnan, Siam, the Malay Peninsula, and Sumatra.

There are three names which have hitherto been given as

synonyms of *X. hæmacephala*:—(1) *Bucco parvus* Gmelin, Syst. Nat. i. p. 407, of which the type locality is said to be Senegal; but the description shows that it is probably a small *Barbatula*, and anyway it has nothing to do with this Barbet. (2) *Bucco tathami* Gmel. Syst. Nat. i. p. 408. This is founded on the plate in Lath. Syn. i. and p. 504, which is not in the least like *Xantholæma hæmacephala*. The plate is of a bird called "the Buff-faced Barbet," and no locality is given. (3) *Bucco nanus* Bodd. Tabl. Pl. Enl. p. 47: Cayenne. This is founded upon Latham's Black-spotted Barbet (i. p. 496), which probably represents *Capito niger*.

Shelley misquotes Marshall as giving this bird the name (amended) of *hæmatocephala* in his Monogr. Capit. p. 101, pl. 42 (1871), but as a matter of fact Marshall calls it *hæmacephala*.

It should be noted that the bird from Khorasan has a very small bill (12 mm.), and is very yellowish-green with an intense sheen on the upper plumage equalled by very few specimens elsewhere. This may well be an individual character, but it will be interesting to examine further specimens.

XIII.—*Notes on Birds observed in Palestine.*

By Major A. G. L. Sladen, M.C., R.E., M.B.O.U.

(Plate IV.)

From July to the end of October 1917, I found myself in that curious semi-desert of southern Palestine which was then occupied by the Egyptian Expeditionary Force to the south and south-east of Gaza. The country here, though extremely fertile after the rains of winter and producing heavy crops of grain in the spring, becomes during summer and autumn a vast tract of dry and sandy land, swept by dust-storms and scorched by the sun. There are few trees